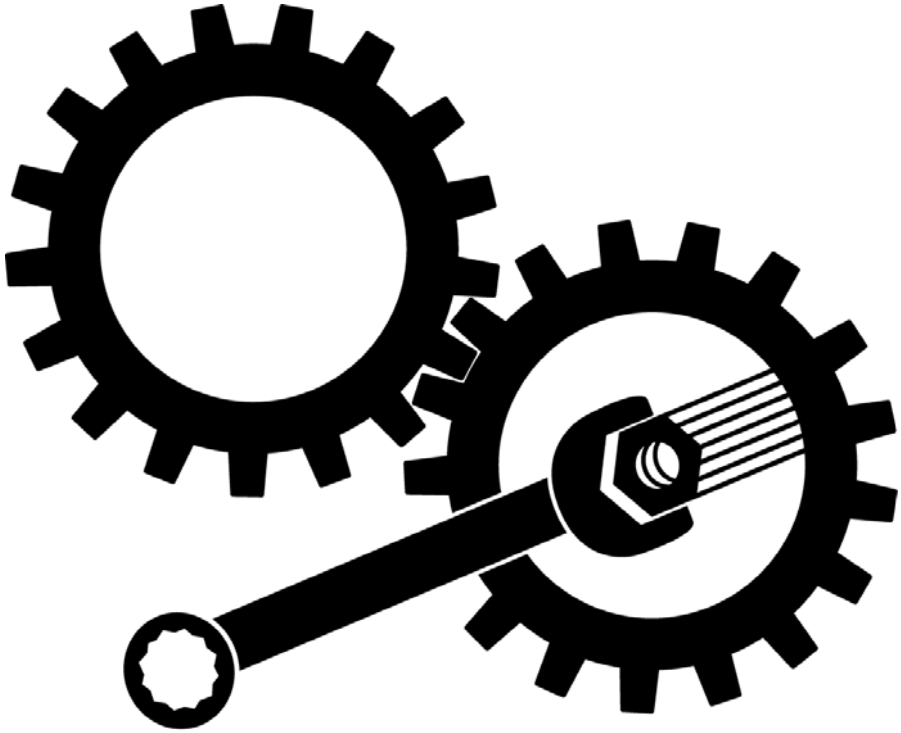
932 Sno-Thro

Service Manual

Models 932105, 932506



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Type: Type : Typ: Tipo: Tipo: Type: Typ: Tyyppi: Typ:	WALK BEHIND SNOW THROWER – LES CHASSES-NEIGE AUTOTRACTÉS – HANDGEFÜHRTE SCHNEEFRÄSE – SPAZZANEVE SEMOVENTE – CAMINAR POR DETRÁS DE LA LANZADORA DE NIEVE – SNØFRESER – SJÄLVGÅENDE SNÖSLUNGA – KÄSINOHJAILTAVA LUMILINKO – ODGARNIACZ ŚNIEGU DO PROWADZENIA PRZED SOBĄ
Trade Name: Appellation commerciale : Handelsbezeichnung: Nome commerciale: Nombre comercial: Handelsnavn: Handelsbeteckning: Kauppanimi: Nazwa handlowa:	Ariens
Model: Modèle : Modell: Modello: Modelo: Modell: Modell: Malli: Model:	932506

Conforms to: Est conforme à : Mit den Anforderungen der folgenden Richtlinien übereinstimmt: È conforme a: Cumple con: Er i samsvar med: Överensstämmer med: Täyttää seuraavat vaatimukset: Jest zgodny z:

98/37/EC, 89/336/EEC,
2000/14/EC Conformity Assessment Annex V. Annexe V de l'évaluation de conformité. Konformitätsbewertung, Anhang V. Annesso V della valutazione di conformità. Anexo V de la evaluación de la conformidad. Samsvarsvurdering etter vedlegg V. Bedömning av överensstämmelse Bilaga V. Vaatimustenmukaisuuden arviointi, liite V. Dodatek V, Ocena zgodności.

Representative Measured Sound Power Level (L_{wa}) – Niveau de puissance acoustique représentatif mesuré (L_{wa}) – Repräsentativer gemessener Geräuschpegel (L_{wa}) – Livello di potenza sonora rappresentativo rilevato (L_{wa}) – Nivel de potencia acústica representativo medido (L_{wa}) – Representativt målt lydeffektnivå (L_{wa}) – Representativ uppmätt ljudnivå (L_{wa}) – Tyypillinen mitattu äänitehotaso (L_{wa}) – Zmierzony reprezentatywny poziom mocy akustycznej (L_{wa}) –	Guaranteed Sound Power Level (L_{wa}) – Niveau de puissance acoustique garanti (L_{wa}) – Garantierter Geräuschpegel (L_{wa}) – Livello di potenza sonora garantito (L_{wa}) – Nivel de potencia acústica garantizado (L_{wa}) – Garantert lydeffektnivå (L_{wa}) – Garanterad uppmätt ljudnivå (L_{wa}) – Taattu äänitehotaso (L_{wa}) – Gwarantowany reprezentatywny poziom mocy akustycznej (L_{wa}) –
932506: 108 dB_A	932506: 112 dB_A

Fred J. Moreaux:
Quality and Conformance Manager (Keeper of Technical File) Responsable de la qualité et de la conformité des produits (Dépositaire de la fiche technique) Manager Qualitätssicherung und Konformität (Archivar der technischen Akte) Responsabile della qualità e della conformità del prodotto (Depositario del file tecnico) Gerente de calidad y conformidad (Depositario del archivo técnico) Kvalitet- og samsvarsansvarlig (innehaver av tekniske data) Chef för kvalitet och produktöverensstämmelse (Innehavare av tekniska data) Laadusta ja vaatimustenmukaisuudesta vastaava päällikkö (Teknisen tiedoston haltija) Kierownik do spraw jakości i zgodności (Przechowujący Dokumentację Techniczną)

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Brillion, WI 54110-0157 USA
Signature Signature Unterschrift Firma Firma Signatur Namnteckning Allekirjoitus Podpis

05/21/2004
Date Date Datum Data Fecha Dato Datum Päivä̈ys Data

CE Sound and Vibration – Niveau sonore et vibration CE – CE-Geräuschpegel und Vibrationswerte – Livello sonoro e vibrazioni CE – Sonido y vibración CE – CE-lydnivå og Vibrasjonsmåling – CE ljudnivå och Vibrations-mätning – CE-melutaso Tärinä – CE Dźwięku i Wibracji

Model: – Modèle : – Modell: – Modello: – Modelo: – Modell: – Modell: – Malli: – Model:		932506	
Oper. Ear Sound Pressure (L_{pa}) in dB_A – Pression acoustique Pression sonore à aux oreilles de l'opérateur (L_{pa}) en dB_A – Geräuschstärke am Ohr des Bedieners (L_{pa}) in dB_A – Potenza sonora percepita dall'operatore (L_{pa}) in. dB_A – Presión de sonido en el oído (L_{pa}) in dB_A – Lydtrykk i førerens øre (L_{pa}) in. dB_A – vid förarens position (L_{wa}) i dB_A – Kuljettajan korvaan kohdistuva äänipaine (L_{pa})/dB_A – Robocze ciśnienie akustyczne na uchu (L_{pa}) w decybelach$_A$		94	
Vibration Measure (m/sec^2) @ Operator Hands – Niveau de vibrationaux mains de l'opérateur – Vibrationswerte An den Händen des Bedieners – Misura delle vibrazioni alle mani dell'operatore – Cantidad de vibración en las manos del operador – Vibrasjonsmåling ved brukerens hender – Vibrationsmätning vid förarens händer – Tärinä kuljettajan käsissä – Pomiar wibracji (m/sec^2) na rękach operatora **X**		1.8	
Y		5.1	
Z		5.6	

SECTION 1 - INTRODUCTION

1.1 THE MANUAL

It is the purpose of this manual to provide complete instructions for service, maintenance, disassembly, repair, and installation of the mechanical components for the 932 Snow-Thro.

Dealer trained service personnel should use this manual as a supplement to and reminder of the training sessions conducted by the company.

Read all information for servicing a part of system before repair work is started to avoid needless disassembly.

Operation

Before operation of the unit, carefully and completely read manuals supplied with the unit. The contents will provide you with an understanding of safety instructions and controls during normal operation and maintenance.

Safety Messages

For your safety and the safety of others always read, understand, and follow all DANGER, WARNING, and CAUTION messages found in manuals and on safety decals.

Directional Reference

All reference to left, right, front, or rear are given from the operator in the operator position and facing the direction of forward travel.

1.2 SERVICE AND REPLACEMENT PARTS

When ordering publications, replacement parts, or making service inquiries, know the Model and Serial numbers of your unit and engine.

Porduct model and serial numbers are located on the product registration form in the unit literature package. They are printed on a serial number label, located on the frame of your unit.

Figure 1

1.3 PRODUCT REGISTRATION

The Ariens dealer must register the product at the time of purchase. Registering the product will help the company process warranty claims or contact you with the latest service information. All claims meeting requirements during the limited warranty period will be honored, whether or not the product registration card is returned. Keep a proof of purchase if you do not register your unit.

Customer Note: If the dealer does not register your product, please fill out, sign, and return the product registration card to Ariens or go to www.ariens.com.

1.4 UNAUTHORIZED REPLACEMENT PARTS

Use only Ariens replacement parts. The replacement of any part on this vehicle with anything other than an Ariens authorized replacement part may adversely affect the performance, durability, or safety of this unit and may void the warranty. Ariens disclaims liability for any claims or damages, whether warranty, property damage, personal injury, or death arising out of the use of unauthorized replacement parts.

1.5 DISCLAIMER

Ariens reserves the right to discontinue, make changes to, and add improvements upon its products at any time without public notice or obligation. The descriptions and specifications contained in this manual were in effect at printing. Equipment described within this manual may be optional. Some illustrations may not be applicable to your unit.

1.6 TECHNICAL SERVICE COMMUNICATIONS

Ariens Technical Service communicates information to the field using Service Letters, Service Bulletins, Product Notices, and Campaigns. Each communication signifies a type of information and priority. The dealer is responsible to carry out the directive provided in the communication. The types of communication are:

Service Letter - General technical information for the dealer. Technical information on how to service the product and product improvements.

Service Bulletin - Notification to update products to resolve certain issues or a notification of a policy change.

Product Notices - Notification of limited product located in a certain region. This is a limited distribution to only those who received the product involved.

Campaigns - Notification of a safety related issue. All product must be updated and are tracked by the factory until all units are corrected.

SECTION 2 - SAFETY

WARNING: To avoid injury to hands and feet, always disengage clutches, shut off engine, and wait for all movement to stop before unclogging or working on snow thrower.

Hand contact with the rotating impeller is the most common cause of injury associated with snow throwers. Never use your hand to clean out the discharge chute.

Keep hands and feet away from auger and impeller.

2.1 SAFETY ALERTS

Look for these symbols to point out important safety precautions. They mean:

Attention!

Personal Safety Is Involved!

Become Alert!

Obey The Message!

The safety alert symbols above and signal words below are used on decals and in this manual. Read and understand all safety messages.

DANGER: IMMINENTLY HAZARDOUS SITUATION! If not avoided, WILL RESULT in death or serious injury.

WARNING: POTENTIALLY HAZARDOUS SITUATION! If not avoided, COULD RESULT in death or serious injury.

CAUTION: POTENTIALLY HAZARDOUS SITUATION! If not avoided, MAY RESULT in minor or moderate injury. It may also be used to alert against unsafe practices.

2.2 NOTATIONS

NOTE: General reference information for proper operation and maintenance practices.

IMPORTANT: Specific procedures or information required to prevent damage to unit or attachment.

2.3 PRACTICES AND LAWS

Practice usual and customary safe working precautions, for the benefit of yourself and others. Understand and follow all safety messages. Be alert to unsafe conditions and the possibility of minor, moderate, or serious injury or death. Learn applicable rules and laws in your area. Always follow the practices set forth in this manual.

2.4 REQUIRED OPERATOR TRAINING

Original purchaser of this unit was instructed by the seller on safe and proper operation. If unit is to be used by someone other than original purchaser; loaned, rented or sold, ALWAYS provide this manual and any needed safety training before operation.

2.5 SAFETY DECALS AND LOCATIONS

ALWAYS replace missing or damaged Safety Decals. Refer to figure below for Safety Decal locations.

Figure 2

DANGER!

OS2080

ROTATING PARTS.

Keep clear of auger while engine is running.

Read Operator's Manual.

Allow operation only by properly trained adult, never children.

Stop engine and remove ignition key prior to leaving the operator's position for any reason.

Keep all controls, guards and safety devices properly serviced and functional.

Never direct discharge towards persons or property that may be injured or damaged by thrown objects.

DANGER!

OS6610

ROTATING PARTS! ONLY use clean-out tool to clear blockages. NEVER use your hands. **High speed impeller rotates below discharge opening. Wait for all moving parts to stop before removing clogs or servicing.**

WARNING!

OL1801

Read Owner/Operator Manual.

OL4370

Keep people away from unit while operating. Keep children out of work area and under watchful care of a responsible adult.

OL0910

Never direct discharge towards persons or property that may be injured or damaged by thrown objects.

OL4010

Stop engine, remove key, read manual before making any repairs, adjustments.

OL4690

Wear appropriate hearing protection.

ONLY use clean-out tool to clear blockages. NEVER use your hands.

2.6 PREPARATION

Before starting any removal of parts, proper preparation is very important for efficient work. A clean work area at the start of each job will allow you to perform service repairs easily and quickly.

To reduce the incidence of misplaced tools or parts, place removed components with all attaching hardware in the disassembly order on a clean work surface. Organization is a key part of proper reassembly.

Tools, instruments, and parts needed for the job should be gathered before work is started. Interrupting a job to locate tools or parts is a needless delay.

2.7 SERVICE POSITION

WARNING: ALWAYS block wheels and know that jack stands or blocks used are stable, strong, secure and will hold the weight of the unit during maintenance.

To ensure the unit is positioned in the proper service position place unit on a flat level surface. ALWAYS stop engine. Assure unit is secure and will not tip over. Strap and clamp onto lift if used.

See *Service Position* in General Maintenance for specific instructions.

2.8 CLEANING AND STORAGE

WARNING: AVOID SHARP EDGES which can cut. Movement of parts can cut off fingers or a hand. Wear gloves, and use extreme caution when servicing.

IMPORTANT: Never spray unit with water or store unit outdoors to help prevent sealed bearing rust or corrosion. Water can seep into sealed bearings and reduce component life. Bearings are sealed against dirt and debris only.

A unit that is excessively dirty should be cleaned before work starts. Cleaning will occasionally uncover trouble sources. Dirt and abrasive dust reduce the efficient work life of parts and can lead to costly replacement.

When taking unit out of extended storage:

1. Check for any damage or loose parts. Repair, replace, or tighten hardware before operation.
2. If a preservative fluid was used in fuel tank, drain and discard. Fill fuel tank with fresh new fuel.

2.9 SAFETY RULES

Read, understand, and follow all safety practices in Owner/Operator Manual before beginning assembly or operating. Failure to follow instructions could result in personal injury and/or damage to unit.

ALWAYS remove key and/or wire from spark plug before assembly, maintenance or service. Unintentional engine start up can cause death or serious injury.

Complete a walk around inspection of unit and work area to understand:

• Work area • Your unit • All safety decals

ALWAYS check overhead and side clearances carefully before operation. ALWAYS be aware of traffic when operating along streets or curbs.

Keep children and people away. Keep children out of work area and under watchful care of a responsible adult.

NEVER allow children to operate or play on or near unit. Be alert and shut off unit if children enter area.

DO NOT allow adults to operate unit without proper training.

Keep area of operation clear of all toys, pets, and debris. Thrown objects can cause injury.

Check for weak spots on docks, ramps or floors. Avoid uneven work areas and rough terrain. Stay alert for hidden hazards.

Avoid uneven and rough terrain. DO NOT operate near drop-offs, ditches, or embankments. Unit can suddenly turn over if a wheel is over the edge of a cliff or ditch, or if an edge caves in.

Falling snow, fog, etc. can reduce vision and cause an accident. Operate unit only when there is good visibility and light.

Only trained adults may operate unit.

Training includes actual operation.

NEVER operate unit after or during the use of medication, drugs or alcohol. Safe operation requires your complete and unimpaired attention at all times.

NEVER allow anyone to operate this unit when their alertness or coordination is impaired.

DO NOT operate unit without wearing adequate outer garments. Wear adequate safety gear, including safety glasses with side shields, and protective gloves. Wear proper footwear to improve footing on slippery surfaces.

DO NOT wear loose clothing or jewelry and tie back hair that may get caught in rotating parts.

Protect eyes, face and head from objects that may be thrown from unit. Wear appropriate hearing protection.

Avoid sharp edges. Sharp edges can cut. Moving parts can cut off fingers or a hand.

ALWAYS keep hands and feet away from all rotating parts during operation. Rotating parts can cut off body parts.

NEVER place your hands or any part of your body or clothing inside or near any moving part while unit is running.

ALWAYS keep hands away from all pinch points.

DO NOT touch unit parts which might be hot from operation. Allow parts to cool before attempting to maintain, adjust or service.

NEVER direct discharge towards persons or property that may be injured or damaged by thrown objects. Use extreme caution on gravel surfaces. Stay alert for hidden hazards or traffic. Adjust Runners so Scraper Blade does not contact gravel. DO NOT use on gravel or crushed rock surfaces.

DO NOT throw snow any higher than necessary.

Deflected materials can cause injury and property damage.

Always stand clear of the discharge area when operating this unit.

Fumes from engine exhaust can cause injury or death. DO NOT run engine in an enclosed area. Always provide good ventilation.

ALWAYS disengage attachment, stop unit and engine, remove key and allow moving parts to stop before leaving operator’s position.

ROTATING IMPELLER AUGER CAN CAUSE SERIOUS INJURY. NEVER ATTEMPT TO UNCLOG OR CLEAN UNIT WHILE ENGINE IS RUNNING.

Read, understand, and follow all instructions in the manual and on the machine before starting.

Understand:

How to operate all controls.

The functions of all controls.

How to STOP in an emergency.

Before starting engine, disengage control(s).

Use only approved extension cords and receptacles when starting units equipped with electric starter. DO NOT connect electric starter cord to any wiring system that is not a three-wire grounded system.

ALWAYS allow unit and engine to adjust to outdoor temperatures before clearing snow.

Always be sure of your footing, especially when operating in reverse or leaving the operator's position. Walk, never run during operation.

DO NOT overload the machine capacity by attempting to clear snow at too fast a rate.

DO NOT operate at too fast a rate.

Slow down and turn corners slowly.

Do not operate in reverse unless absolutely necessary. ALWAYS back up slowly. Always look down and behind before and while backing.

Disengage attachment drive when traveling from one work area to another.

Abnormal Vibrations are a warning of trouble. Striking a foreign object can damage unit. Immediately stop unit and engine. Remove key and wait for all moving parts to stop. Remove wire from spark plug. Inspect unit and make any necessary repairs before restart.

Before cleaning, removing clogs or making any inspections, repairs, etc.: disengage clutch(es), stop unit and engine, remove key, allow moving parts to stop. Allow hot parts to cool.

Run unit a few minutes after clearing snow to prevent freeze-up of attachment.

Disengage attachment when not in use. Disengage all clutches before starting engine. Adjust runners to clear gravel or crushed rock surfaces safely.

Disengage clutch bail when not in use. Before starting engine: disengage clutch bail. DO NOT use on gravel or crushed rock surfaces.

Check clutch and brake operation frequently. Adjust and service as required. All motion of auger must stop quickly when bail is released.

Never leave a running unit unattended. ALWAYS disengage PTO, lower the attachment, set parking brake, and shut off engine before leaving unit. ALWAYS remove key to prevent unauthorized use.

Never carry passengers.

Check clutch and brake operation frequently. Adjust and service as required. All motion of drive wheels and auger/impeller must stop quickly when control levers are released.

Adjust brush height before operating. Engage traction drive clutch before attachment clutch. If brush is set too low or if terrain is irregular brush can drive machine rearward.

DO NOT operate on steep slopes. DO NOT clear snow across the face of slopes. Keep all movement on slopes slow and gradual. DO NOT make sudden changes in speed or direction. Use a slow speed to avoid stops or shifts on slopes. Avoid starting or stopping on a slope.

DO NOT park unit on a slope unless absolutely necessary. When parking on a slope always block the wheels.

ALWAYS shut off engine, remove key, and close fuel shut-off valve or drain fuel when transporting unit on a truck or trailer.

Use extra care when loading or unloading unit onto trailer or truck.

Secure unit chassis to transport vehicle. NEVER secure from rods or linkages that could be damaged.

DO NOT transport machine while engine is running.

Keep unit free of ice or other debris. Clean up oil or fuel spills.

This product is equipped with an internal combustion type engine. DO NOT use unit on or near any unimproved, forest-covered or brush covered land unless exhaust system is equipped with a spark arrester meeting applicable local, state or federal laws. A spark arrester, if it is used, must be maintained in effective working order by operator.

Fuel is highly flammable and its vapors are explosive. Handle with care. Use an approved fuel container.

NO smoking, NO sparks, NO flames. ALWAYS allow engine to cool before servicing.

NEVER fill fuel tank when engine is running or hot from operation.

NEVER fill or drain fuel tank indoors.

Replace fuel cap securely and clean up spilled fuel.

Never fill containers inside a vehicle or on a truck or trailer bed with a plastic liner. Always place containers on the ground away from your vehicle before filling.

When practical, remove gas-powered equipment from the truck or trailer and refuel it on the ground. If this is not possible, then refuel such equipment on a trailer with a portable container, rather than from a gasoline dispenser nozzle.

Keep the nozzle in contact with the rim of the fuel tank or container opening at all times until fueling is complete. Do not use a nozzle lock-open device.

If fuel is spilled on clothing, change clothing immediately.

In case of internal contact, DO NOT induce vomiting!

Before tipping unit up onto housing, remove fuel so no spills will occur and remove battery. Ensure unit is secure and will not tip over during maintenance.

Adjust brush height before operating. Refer to *Operation.*

Before separating brush attachment from unit frame, remove fuel so no spills will occur. Ensure unit is secure and will not tip over during maintenance.

ALWAYS keep protective structures, guards, and panels in good repair, in place and securely fastened. NEVER modify or remove safety devices.

DO NOT change engine governor settings or over-speed engine.

Fumes from engine exhaust can cause injury or death. DO NOT run engine in an enclosed area. Always provide good ventilation.

ALWAYS maintain unit in safe operating condition. Damaged or worn out muffler can cause fire or explosion.

Keep all hardware properly tightened. Check shear bolts frequently. Check slip clutch on units so equipped.

Maintain or replace safety and instruction labels, as necessary.

NEVER store unit with fuel in fuel tank, inside a building where any ignition sources are present such as hot water heaters, space heaters, or clothes dryers. Allow the engine to cool before storing in any enclosure.

Shut off fuel and allow engine to cool completely before storing in closed area or covering unit.

For extended storage, clean unit thoroughly. See Engine Manual for proper storage.

Use only attachments or accessories designed for your unit.

Check components frequently. If worn or damaged, replace with manufacturer's recommended parts.

Storage

DO NOT store unit inside a building with fuel in the fuel tank where any ignition sources are present. Allow unit to cool completely.

ALWAYS clean unit before extended storage. See Engine Manual for proper storage.

Battery

Avoid Electric Shock. Objects contacting both battery terminals at the same time may result in injury and unit damage. DO NOT reverse battery connections.

Explosive Gases from battery can cause death or serious injury. Poisonous battery fluid contains sulfuric acid and its contact with skin, eyes or clothing can cause severe chemical burns.

No flames, No sparks, No smoking near battery.

ALWAYS wear safety glasses and protective gear near battery.

DO NOT TIP battery beyond a 45° angle in any direction.

ALWAYS keep batteries out of reach of children.

Battery posts, terminals and related accessories contain lead and lead compounds, chemicals known to the State of California to cause cancer and reproductive harm. Wash hands after handling.

Follow First Aid directions for contact with battery fluid.

External Contact: Flush with water.

Eyes: Flush with water for at least 15 minutes and get medical attention immediately!

Internal Contact: Drink large quantities of water. Follow with Milk of Magnesia, beaten egg or vegetable oil. Get medical attention immediately!

Avoid Electric Shock. DO NOT reverse battery connections.

Explosive Gases! Poisonous battery fluid contains sulfuric acid and its contact with skin, eyes, or clothing can cause severe burns.

No flames. No sparks. No smoking near battery.

Always wear safety glasses and protective gear near battery.

DO NOT TIP battery beyond a 45° angle in any direction.

ALWAYS KEEP BATTERIES OUT OF REACH of children.

Traveling

To travel from one work area to another:

Set Throttle to Slow or Part-Throttle position.

Press down on handlebars enough to raise front of unit slightly off surface.

Engage wheel drive clutch without engaging attachment drive clutch.

Transport

ALWAYS shut off engine, remove key, and close fuel shut-off valve when transporting unit on a truck or trailer.

Use extra care when loading or unloading unit onto trailer or truck.

Secure unit chassis to transport vehicle. NEVER secure from rods or linkages that could be damaged.

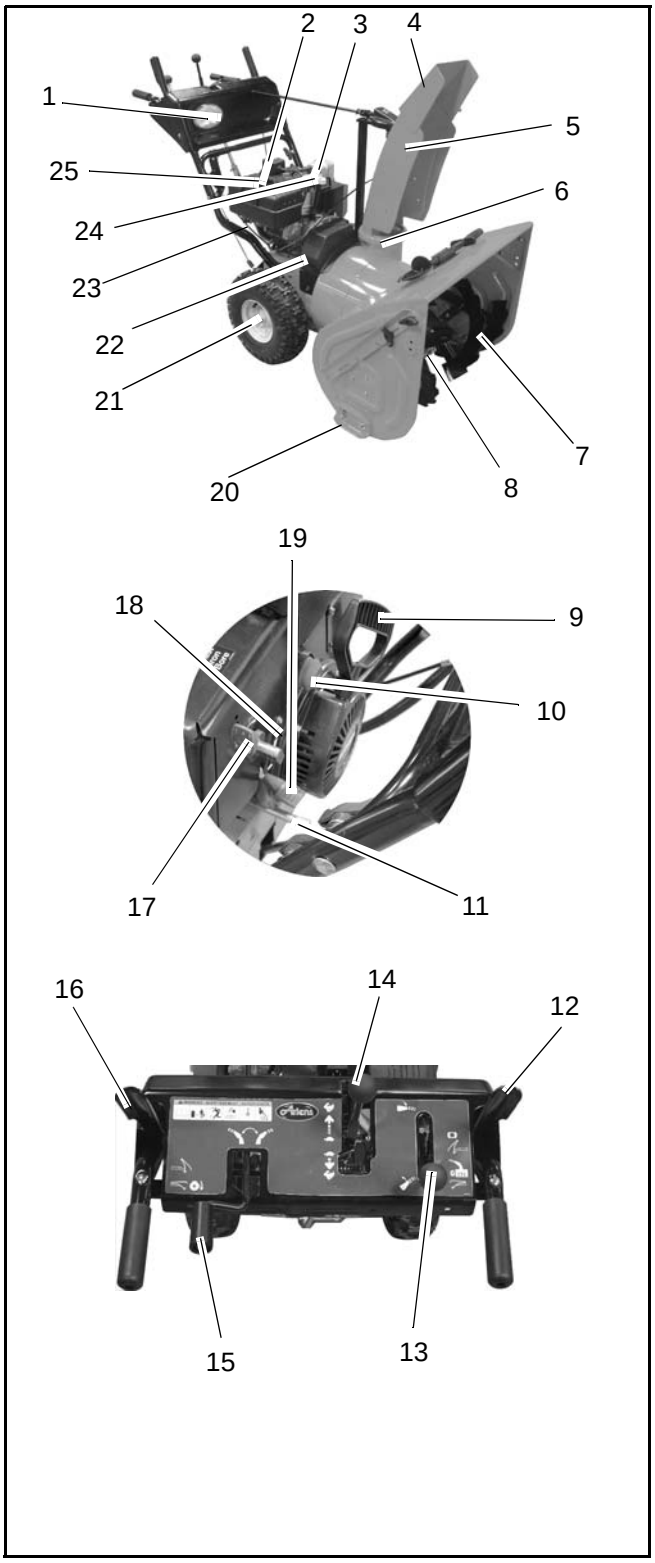
DO NOT transport machine while engine is running.

SECTION 3 - SPECIFICATIONS

Model Number	**932506**	**932105**
Description	**8526**	**8526**
Engine - Tecumseh	LH318SA	LH318SA
Power Max - HP (Kw/min^{-1})	8.5 (6.3)	
Fast Idle Speed-RPM (min^{-1})	3600 ± 150	
Displacement - in. (cc)	19.43 (318.3)	
Electric Start	Optional 240V	120V
Fuel	See Engine Manual	
Tank Capacity - qt. (L)	4 (3.8)	
Snow Clearing Width - in. (cm)	26 (66.0)	
Chute		
Rotation Angle	215°	
Rotation Control at Handlebar	Yes	
Dual Handle Interlock	Yes	
Impeller		
Diameter - in. (cm)	14 (35.6)	
Speed-RPM-Max (min^{-1})	1150	
Auger		
Diameter - in. (cm)	16 (40.6)	
Speed-RPM-Max (min^{-1})	118	
Auger Brake	Yes	
Drive	Disc-O-Matic (R^{3})	
Speeds	6 Forward and 2 Reverse	
Pneumatic Tires - in. (cm)	15 (38.1)	
Size and Weight		
Height - in. (cm)	45.5 (115.6)	
Length - in. (cm)	60.8 (154.4)	
Width - in. (cm)	28.6 (72.6)	
Weight - lbs (Kg)	265.5 (116.4)	261.5 (118.6)
Headlight	Yes	

SECTION 4 - GENERAL MAINTENANCE & ADJUSTMENTS

4.1 CONTROLS AND FEATURES



1. Headlight
2. Electric Starter (932105)
3. Oil Fill and Dipstick
4. Discharge Chute Deflector
5. Discharge Chute
6. Impeller
7. Auger
8. Scraper Blade
9. Recoil Starter Handle
10. Primer Bulb
11. Oil Drain Plug
12. Attachment Clutch Lever
13. Deflector Remote Control
14. Speed Selector
15. Chute Crank
16. Traction Drive Clutch Lever
17. Ignition Switch, push-pull
18. Choke
19. Throttle (Engine Stop)
20. Runner(s)
21. Axle Lock Pin
22. Belt Cover
23. Fuel Shut-off Valve
24. Spark Plug and Wire
25. Gas Tank and Cap

Figure 3

Ariens dealers will provide any service or adjustments which may be required to keep your unit operating at peak efficiency. Should engine service be required, contact an Ariens dealer or an authorized engine manufacturer's service center.

WARNING: AVOID INJURY. Read and understand the entire *Safety* section before proceeding.

4.2 SERVICE POSITIONS

WARNING: Before tipping unit up onto housing, remove fuel so no spills will occur and remove battery (if equipped). Ensure unit is secure and will not tip over during maintenance.

Place unit on a flat level surface. Tip unit forward onto front of impeller housing for service. Assure unit is secure and will not tip over. Strap and clamp onto bench if needed.

4.3 TO STOP IN AN EMERGENCY

Immediately release both control levers to stop unit in an emergency. Stop engine, remove key and wait for all rotating parts to stop before leaving operator's position.

4.4 STARTING AND SHUT OFF

WARNING: FAILURE TO FOLLOW INSTRUCTIONS could result in personal injury and/or damage to unit. DO NOT attempt to start your unit at this time. Read entire Owner/ Operator Manual and the Engine Manual first.

IMPORTANT: Allow unit and engine to adjust to the outdoor temperatures before clearing snow. Before shut-off, run the attachment a few minutes to prevent freeze-up.

IMPORTANT: Try out each control without the engine running to see how it works and what it does.

Manual Start

1. Turn discharge chute straight ahead.
2. Make sure that the traction clutch and attachment drive clutch levers are fully disengaged.
3. Push primer bulb 2 or 3 times for cold engine.

NOTE: When temperature is below -15° F (-26° C) additional priming may be needed.

4. If engine is cold, apply choke. See Engine Manual for detailed instructions.

NOTE: A warm engine requires less choking than a cold engine.

5. Set throttle to proper starting position.
6. Insert key into ignition switch and push into RUN position. DO NOT twist key after it is inserted.
7. Grasp starter handle and pull rope out slowly until it pulls harder. Let rope rewind slowly.
8. Pull rope with a rapid continuous full arm stroke. Let rope rewind slowly.

IMPORTANT: DO NOT let starter handle snap against starter.

9. Repeat steps 7 and 8 until engine starts. (If engine does not start, refer to *Troubleshooting*.)
10. Adjust choke as needed.
11. Set throttle to PART THROTTLE or SLOW position for adaptation to outside temperature or travel. Set throttle to FAST position for normal operation.

Electric Start

1. Connect extension cord to prongs on starter.

IMPORTANT: Prevent damage to unit. Know voltage of your starter and only use matching outlets.

2. Plug extension into 120V or 240V 3-wire, grounded outlet.
3. Turn discharge chute straight ahead.
4. Make sure that the traction clutch and attachment drive clutch levers are fully disengaged.
5. Push primer bulb 2 or 3 times for cold engine.

NOTE: When temperature is below -15° F (-26° C) additional priming may be needed.

6. Insert key into ignition switch on engine and push into RUN position. DO NOT twist key after it is inserted.
7. If engine is cold, apply choke. A warm engine requires less choking than a cold engine. See Engine Manual for detailed instructions.
8. Set throttle to proper starting position.
9. Press starter button on engine until engine starts.

IMPORTANT: DO NOT operate starter more than 15 seconds per minute, as overheating and damage can occur. (If engine does not start, refer to *Troubleshooting*.)

10. Adjust choke as needed.
11. Disconnect power cord from outlet, then starter.
12. Set throttle to PART THROTTLE or SLOW position for travel or adaptation to outside temperature. Once achieved, set throttle to FAST position for normal operation.

Shut Off

1. Release traction drive clutch lever and allow unit to come to a complete stop.
2. Run Impeller a few minutes after use to prevent freeze-up of Impeller.
3. Release attachment clutch lever and wait for all moving parts to come to a complete stop.
4. Move throttle to the STOP position.
5. Remove key.

4.5 FUEL TANK

To add fuel to the fuel tank:

1. ALWAYS place unit in open or well- ventilated area.
2. Stop engine and allow to cool.
3. Clean fuel cap and surrounding area to prevent dirt from entering fuel tank.
4. Remove cap.

IMPORTANT: DO NOT use gasohol or gasoline containing alcohol. See Engine Manual for correct type and grade of fuel.

5. Fill fuel tank to within 1/2 in. (1.2 cm) below bottom of filler neck with unleaded gasoline.

NOTE: Tank capacity is 1 gallon (3.8 liters).

6. Replace fuel cap and tighten.
7. ALWAYS clean up any spilled fuel.

WARNING: POTENTIAL HAZARDOUS! Fuel is extremely flammable and highly explosive. Personal injury and property damage may result if not handled properly.

- Fill the fuel tank outdoors in an open area. Do not fill when the engine is hot. Wipe up any fuel spills.
- Never fill the fuel tank completely full. Empty space in tank allows fuel to expand.
- Never smoke when handling fuel. Stay away from open flames. Fuel fumes can be ignited by sparks.

Fuel Shut-Off Valve

IMPORTANT: The unit is equipped with a gravity feed type of fuel system. If the fuel shut-off valve is not in the closed OFF position, gasoline can leak out of the carburetor while the unit is being transported.

IMPORTANT: The unit engine fuel shut-off valve has two positions:

1. Closed OFF
2. Open ON

ALWAYS close or turn the fuel shut-off valve to the OFF position for servicing, transporting or storing the unit.

The unit must have the fuel shut-off valve in the open ON position for proper fuel delivery to the engine during normal operation (Figure 3).

Check the fuel shut-off valve frequently to assure it is in the proper position for operation or service.

4.6 PRE-START

Frozen Impeller

IMPORTANT: Before starting engine, check impeller to be sure it is not frozen.

To check impeller:

1. With key in STOP position, squeeze attachment clutch lever to Engaged position.
2. Pull recoil starter handle.
3. If Impeller is frozen, (cannot pull starter handle) move unit to a heated area and thaw to prevent possible damage.

4.7 MAINTENANCE

MAINTENANCE SCHEDULE

Service Performed	Each Use	Every 5 hrs.	Every 25 hrs.	Yearly
Check Dual Handle Interlock	•			
Check Fasteners	•			
Check Clutches	•			
Clean Engine	•			
Check Engine Oil		•		
Change Engine Oil		*	•	
Check Tire Pressure			•	
Check Auger Gearcase			•	•
General Lubrication			•	•

* After first two hours of operation.

Check Dual Handle Interlock

Without the engine running, press down (engage) both clutch levers. Release attachment clutch lever. Attachment clutch should remain engaged until traction clutch lever is released, then both clutches *must* disengage.

Check Fasteners

Make sure all hardware is tightened properly.

Check Clutches

Auger / impeller must stop within 3 seconds when attachment clutch/impeller brake lever is released.

Wheels must stop quickly when traction drive clutch lever is released.

If clutches do not engage or disengage properly, adjust or repair before operation (see *Service and Adjustments*).

Check Engine Oil

The engine crankcase oil should be checked every 5 hours of operation. Oil level MUST be maintained in

safe operating range on dipstick at all times or engine damage will result (See Engine Manual).

Park unit on a level surface. Refer to Engine Manual for detailed instructions.

Change Engine Oil

Change oil after first 2 hours of operation, thereafter change oil every 25 hours (more often if required). Refer to Engine Manual for detailed instructions.

Run engine just prior to changing oil. Warm oil will flow more freely and carry away more contamination. Remove the oil drain plug from the rear of the unit and tip the unit back to help drain all the oil.

Check Tire Pressure

Keep tires at pressure listed on the tire sidewall.

Check Auger Gearcase

IMPORTANT: Proper oil level must be maintained.

Gear cases are filled to the correct level at the factory. Unless there is evidence of leakage, no additional lubricant should be required. Check oil level each season or every 25 hours of operation.

To ensure adequate lubricant level:

1. Remove filler plug (Figure 4). Lubricant must be at least up to bottom of lubricant filler hole with unit resting on a level-surface.
2. Add lubricant if required. Allow oil to drain to level of plug and replace plug.

IMPORTANT: Use only Ariens special gear lubricant L-2 (Part Number 00008000).

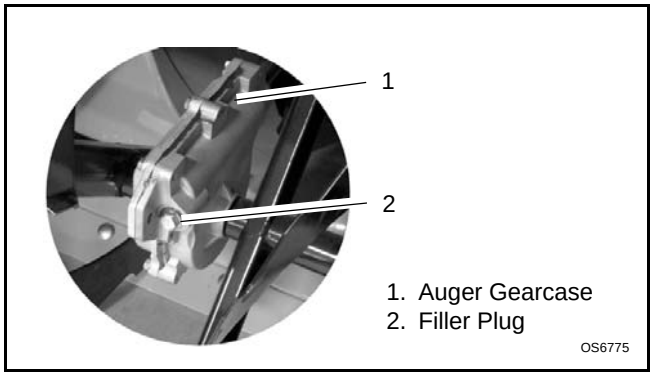


Figure 4

General Lubrication

IMPORTANT: Wipe each fitting clean before and after lubrication.

IMPORTANT: DO NOT allow grease or oil to get on friction disc, friction plate or belts.

NOTE: Apply Stens Mix Hi-Temp Grease or equivalent to the lubrication fittings. See *Service Parts.*

NOTE: Sno-Thro should be lubricated (Figure 5) at beginning of season or every 25 operating hours.

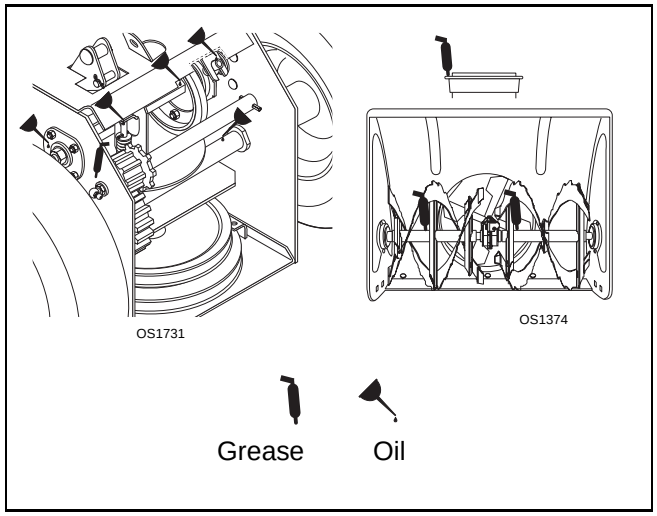


Figure 5

Auger Shaft

NOTE: To grease auger shaft, remove shear bolt nuts, and shear bolts. Turn auger on shaft while applying grease at zerk fittings. Replace shear bolt per instructions in *Service and Adjustments*.

4.8 ENGINE

Cooling

The engine is air cooled. Air must circulate freely around engine from air intake to cooling fins on cylinder head and block, to prevent overheating.

Each year (more often if conditions require) remove cooling shrouds and clean cooling fins. Clean external surfaces of engine of dust, dirt, and oil deposits which can contribute to improper cooling. See Engine Manual.

IMPORTANT: DO NOT operate engine with cooling shrouds removed. Engine overheating and damage will result.

Refer to Engine Manual for detailed instructions.

4.9 ATTACHMENT DRIVE BELT REPLACEMENT

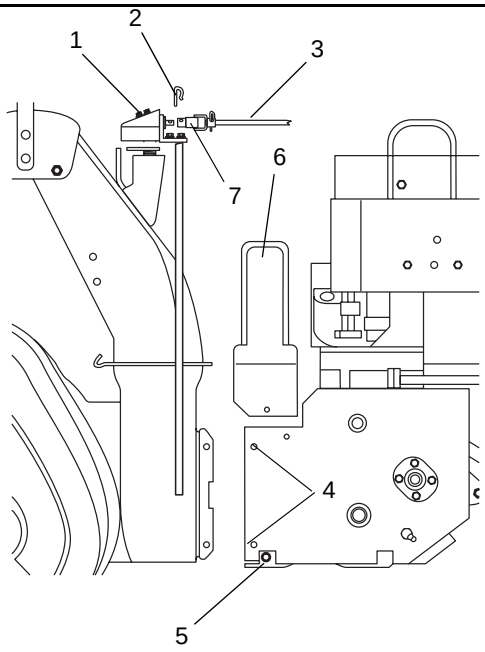
Remove Attachment Drive Belt (Figure 7)

1. Shut off engine, remove key, disconnect spark plug wire and allow unit to cool completely.
2. Remove two screws securing belt cover to unit and remove belt cover.
3. Remove spring pin from chute crank rod assembly at universal joint and separate.
4. Remove belt finger by removing cap screw mounting belt finger to engine.
5. Remove attachment drive belt from engine sheave (it may be necessary to turn engine sheave using recoil starter handle).

CAUTION: Always support Sno-Thro frame and housing when loosening the cap screws holding them together. Never loosen cap screws while unit is in service position.

IMPORTANT: To avoid bending bottom cover, when tipping unit apart, support handlebars firmly or tip unit up on housing and remove bottom cover by removing four cap screws before separating unit.

6. Support Sno-Thro frame and housing (Figure 6).
7. Remove top two cap screws and loosen lower cap screws holding blower housing to frame (one on each side).
8. Hold the brake away from the attachment pulley and separate housing from unit. Lower handlebar on floor.
9. Remove attachment drive belt from lower pulley (hold brake away from belt).



1. Pinion and Gear
2. Spring Clip Pin
3. Chute Crank
4. Housing Bolt Holes
5. Bottom Cover
6. Belt Cover
7. Universal Joint

OS1731

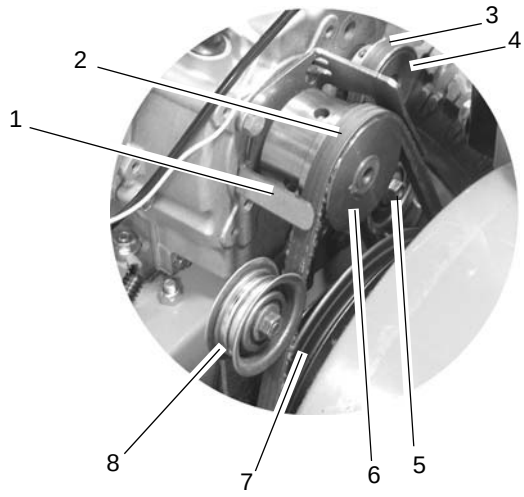
Figure 6

Replace Attachment Drive Belt ()

1. Place new belt onto lower pulley and while holding brake out of way, tip unit together.
2. Secure blower housing to frame with cap screws.
3. Place belt onto engine sheave.
4. Make sure engine sheave and attachment pulley align, and belt rides on idler.
5. Replace belt finger.

IMPORTANT: BELT FINGER MUST BE between 1/16 to 1/8 in. (1.6–3 mm) from belt with attachment clutch engaged or belt grabbing may occur causing impeller to rotate while attachment clutch is disengaged.

6. Adjust clutch per *Attachment Clutch/Impeller Brake Adjustment* below.
7. Replace chute crank and secure with spring pin.
8. Replace belt cover and secure with screws.



1. Belt Finger
2. Attachment Drive Belt
3. Traction Drive Belt
4. Camshaft Pulley
5. Traction Belt Idler
6. Engine Sheave
7. Attachment Pulley
8. Attachment Belt Idler

OS6810

Figure 7

4.10 TRACTION DRIVE BELT REPLACEMENT

NOTE: Housing and frame must be tipped apart and attachment drive belt removed from engine sheave in order to change traction drive belt (Figure 6 & 7).

CAUTION: Always support Sno-Thro frame and blower housing when loosening the cap screws holding them together. Never loosen cap screws while unit is in service position.

1. Remove attachment drive belt (See *Remove Attachment Drive Belt*).
2. Pull idler away from traction drive belt and remove belt from idler, camshaft pulley and driven pulley (it may be necessary to turn camshaft pulley using recoil starter handle).

NOTE: To gain clearance, engage traction clutch and if necessary pull back attachment brake/idler arm.

3. Replace traction drive belt.
4. Replace attachment drive belt (See *Replace Attachment Drive Belt*).

4.11 SHEAR BOLTS

IMPORTANT: Use only Ariens shear bolts for replacement. Use of any other type of shear bolt may result in severe damage to unit.
Occasionally a foreign object may enter the auger/ impeller housing and jam the auger, breaking shear bolts (Figure 8) which secure the auger to the shaft. This allows auger to turn freely on the shaft preventing damage to gear drive.

For Replacement:

1. Align shear bolt holes in auger with shear bolt holes in the shaft.
2. Drive shear bolt through hole (if shear bolt was broken this will drive remaining part from shaft).
3. Secure shear bolt with nut.

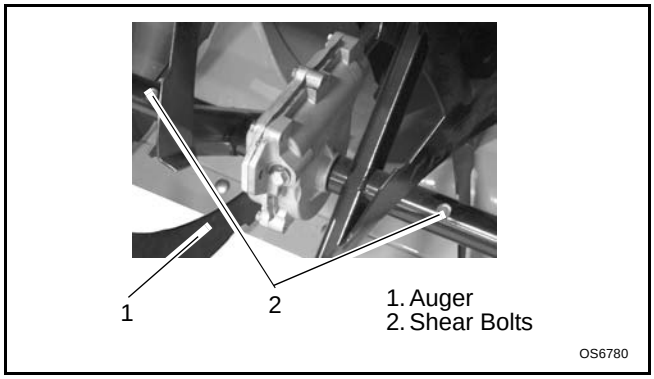


Figure 8

4.12 TIRE PRESSURE

Keeps tires inflated to the pressure listed on the tire sidewall.

SECTION 5 - SERVICE AND ADJUSTMENTS

WARNING: AVOID INJURY. Read and understand the entire *Safety* section before proceeding.

5.1 DEFLECTOR REMOTE

Deflector must stay in selected position while throwing snow.

If deflector does not stay in set position:

1. Tighten nut beneath the control panel to increase friction on pressure flange (Figure 9).

1. Nut
2. Pressure Flange
3. Adjusting Nuts
4. Cable Support Bracket

OS6700

Figure 9

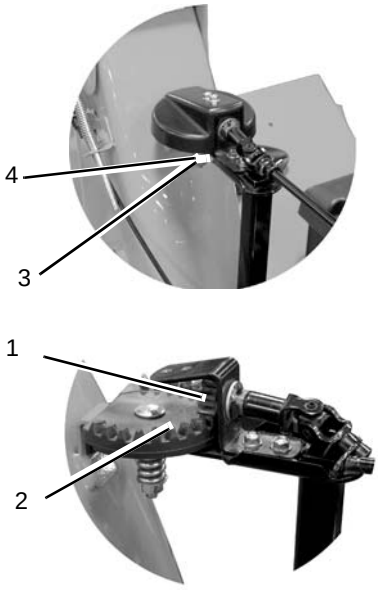
If deflector does not follow full range of travel:

1. Push deflector remote all the way forward.
2. Loosen adjusting nuts on cable support bracket.
3. To adjust the deflector lower, slide cable down. Tighten bottom nut.
4. To adjust deflector higher, slide cable up. Tighten top nut.
5. Check travel and repeat adjustment as necessary.

5.2 DISCHARGE CHUTE

If chute does not stay in position while operating, tighten nut on carriage bolt at pivot point to increase tension on spring (Figure 10).

Smooth and easy rotation of properly lubricated chute with crank is obtained by adjusting pinion and chute gear teeth so they mesh together.



1. Pinion
2. Chute Gear
3. Carriage Bolt
4. Spring

OS6730

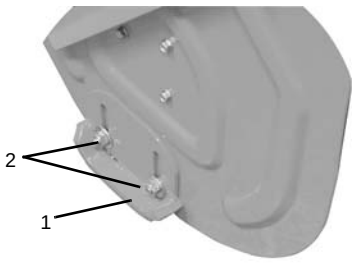
Figure 10

5.3 RUNNERS

Runners should be adjusted (Figure 11) as conditions require.

1. Position unit on a hard, flat, smooth level surface.
2. Adjust runners by inserting a spacer of desired thickness under center of scraper blade, loosen runner hardware, slide runners to flat surface. Allow 1/8 in. (3 mm) between scraper blade and hard smooth surfaces. Allow 1-1/4 in. (30 mm) between scraper blade and uneven or gravel surfaces. Retighten hardware.

NOTE: Keep housing level by adjusting runners equally.



1. Runner
2. Runner Hardware

OS6710

Figure 11

5.4 ATTACHMENT CLUTCH/BRAKE ADJUSTMENT

WARNING: IMPROPER ADJUSTMENT could result in unexpected movement of auger and impeller causing death or serious injury. Auger / impeller must stop within 3 seconds when attachment clutch/impeller brake lever is released.

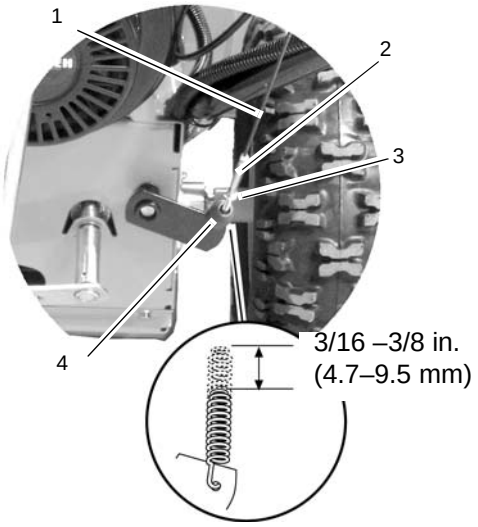
WARNING: Adjustment procedure requires the engine to be run with the belt cover off. Read, understand and follow all *Operational, Fuel* and *Maintenance and Service Safety Rules* before adjusting your unit.

1. Remove belt cover.
2. Adjust cable slack (Figure 12).

IMPORTANT: The clutch cable must be slack when lever is disengaged.

   a. With clutch lever disengaged, loosen jam nut on cable adjuster.
   b. Turn adjuster body to remove all slack from the cable. Do not stretch spring or move lower clutch arm.
   c. Finger tighten the jam nut and then turn back the adjuster body 2 turns.
   d. Hold adjuster body with pliers and tighten jam nut with wrench.

3. Check spring length.
   a. Measure the length of the clutch cable spring.
   b. Engage and hold the attachment clutch lever.
   c. Measure the length of the spring again. The spring should be 3/16 – 3/8 in. (4.7 – 9.5 mm) longer when the lever is engaged.
   d. If spring does not stretch at least 3/16 in. (4.7 mm), or the belt tension is insufficient to throw snow properly, remove the attachment belt idler (see Figure 7) and replace it in the hole on the idler arm closer to the belt. Adjust cable slack until spring stretch is 3/16 – 3/8 in. (4.7– 9.5 mm). (Increased spring stretch will increase belt tension).



1. Attachment Control Cable
2. Cable Adjuster
3. Jam Nut
4. Spring

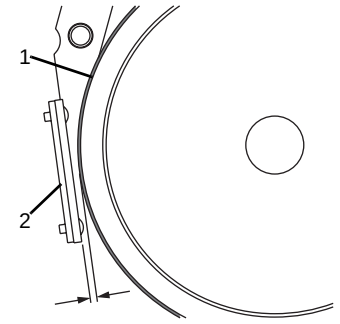
OS6816

Figure 12

4. Check brake.
   a. When the clutch lever is disengaged, the brake must contact the attachment belt.
   b. When the clutch lever is engaged, the brake must be more than 1/16 in. (1.6 mm) away from the belt (Figure 13).

IMPORTANT: If attachment clutch/brake cannot be adjusted within tolerances, see your dealer for repairs.

5. Check belt finger clearance.
   With clutch lever engaged, belt fingers should be 1/16–1/8 in. (1.6-3 mm) from belt. Adjust belt fingers as necessary.
6. Replace belt cover.
7. Check that auger/impeller stops within 3 seconds after attachment clutch/impeller brake bail is released.



1. Drive Belt
2. Brake Shoe and Pad

OS2030

Figure 13

5.5 TRACTION DRIVE CLUTCH ADJUSTMENT

If drive slips, adjust traction clutch to compensate for friction disc wear.

To test traction clutch (Figure 14):

1. Put unit in first forward speed.
2. Without engine running, push unit forward while slowly moving the traction drive clutch lever toward the handle grip.
3. Measure distance between lever and handlebar when the wheels brake. If distance is not 6–1/8 in. ± 1/4 in. (15.5 cm ± 6 mm), adjust the traction clutch.

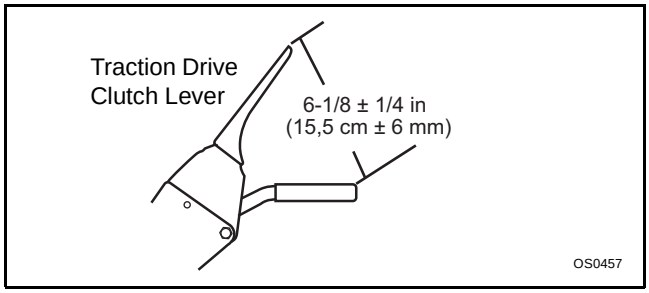


Figure 14

To adjust traction clutch (Figure 15):

1. Loosen jam nut on traction cable adjustment barrel.
2. Turn the adjustment barrel up the cable to decrease the distance between clutch lever and handlebar.
3. Turn the adjustment barrel down the cable to increase the distance between clutch lever and handlebar.
4. Check traction clutch lever distance and repeat adjustment steps if necessary.
5. Tighten jam nut on traction cable adjustment barrel.

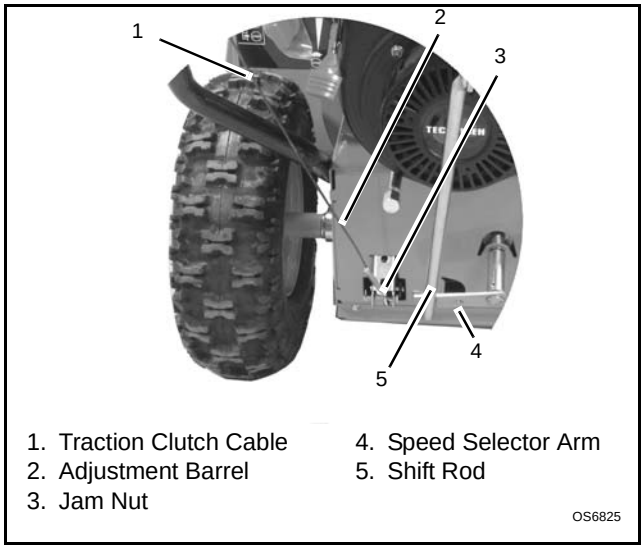


Figure 15

5.6 SPEED SELECTOR ADJUSTMENT

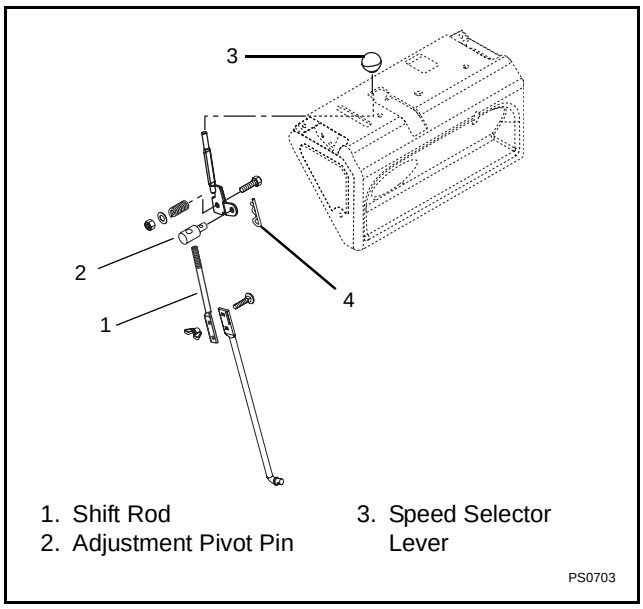


Figure 16

To adjust (Figure 16):

1. Remove hair pin from adjustment pivot pin.
2. Pull shift rod and adjustment pivot pin out of speed selector lever.
3. Place the speed selector in the fastest forward speed position.
4. Pull the shift rod straight down towards the ground as far as it will go.
5. Thread the adjustment pivot pin along the shift rod until it aligns with the mating hole on the speed selector lever.
6. Reinsert the pivot pin into the hole on the speed selector lever.
7. Check forward and reverse speeds.
   a. Start unit.
   b. Shift speed selector into first forward speed.
   c. Engage traction clutch. Unit should move forward.
   d. Stop unit.
   e. Shift speed selector into first reverse speed.
   f. Engage traction clutch. Unit should move backward.
   g. Shut off unit.
8. Adjust pivot pin as needed so unit travels forward when speed selector lever is in first forward position and backward when speed selector lever is in first reverse position.
9. Secure adjustment pivot pin to speed selector lever with hairpin.

SECTION 6 - HANDLEBARS & CONTROLS

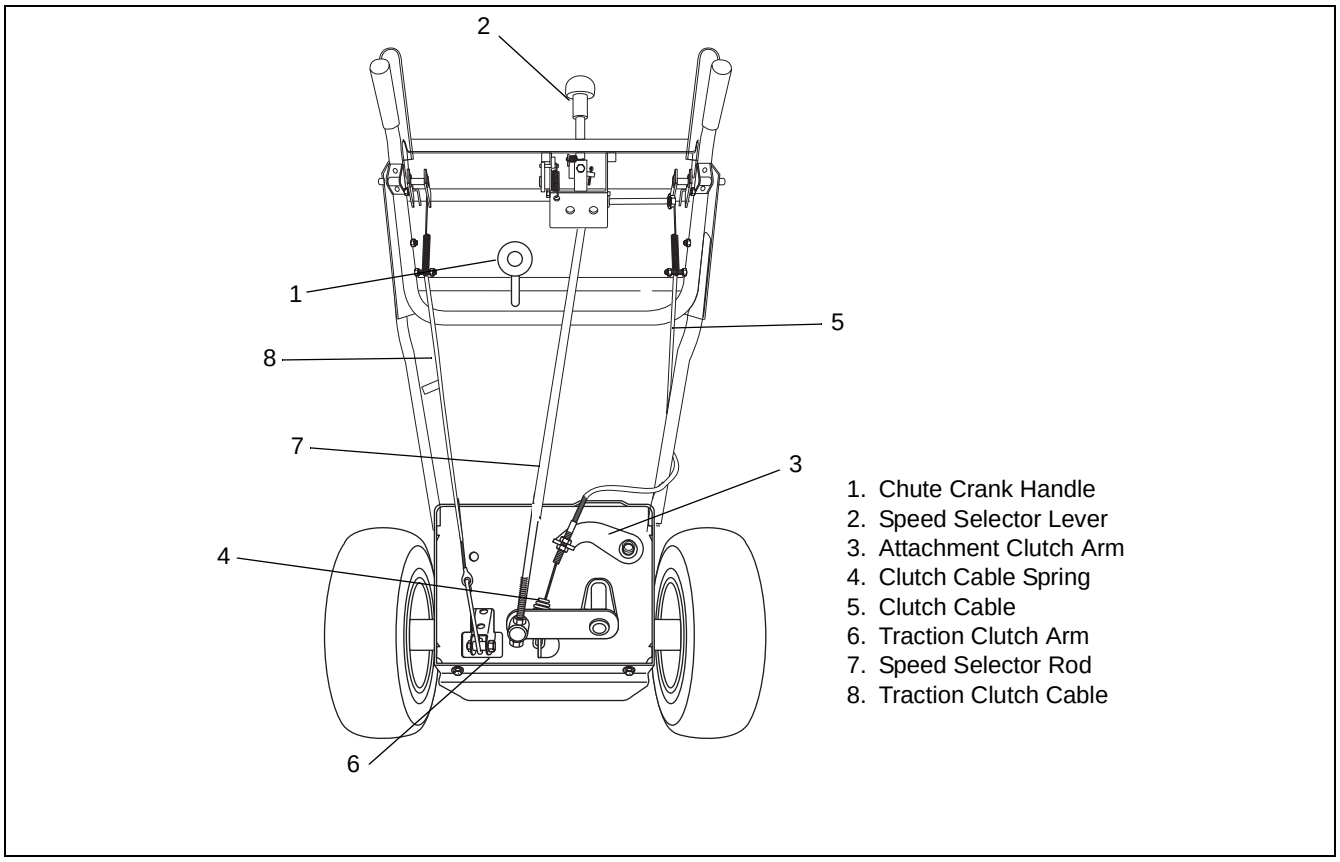


Figure 17

6.1 LOWER HANDLEBAR

1. Remove nut and washer attaching lower handlebar to each side of frame and remove lower handlebar.
2. Check parts for wear or replacement.
3. Assemble, using reverse procedure.

6.2 ATTACHMENT CLUTCH HANDLE

1. Remove push nuts, pin and screws holding clutch handle and pivot to upper handlebar. Remove pivot and disconnect clutch handle from clutch cable.
2. Remove set screw, jam nut and clevis from clutch cable.
3. Remove pin and remove cable.
4. Disconnect spring from lever.
5. Check parts for wear or replacement.
6. Assemble using reverse procedure.

6.3 WHEEL DRIVE CLUTCH LEVER & TRACTION CABLE

1. Remove push nuts, pin, and screws holding pivot and wheel drive clutch lever to upper handle bar. Remove pivot and wheel drive clutch lever.
2. Remove set screw, nut, hair pin and clevis pin holding the clevis to traction clutch cable.
3. Remove set screw in rod adapter and remove traction clutch cable.
4. Check parts for wear or replacement.
5. Assemble using reverse procedure.

Models 932105, 506 Handlebars and Controls

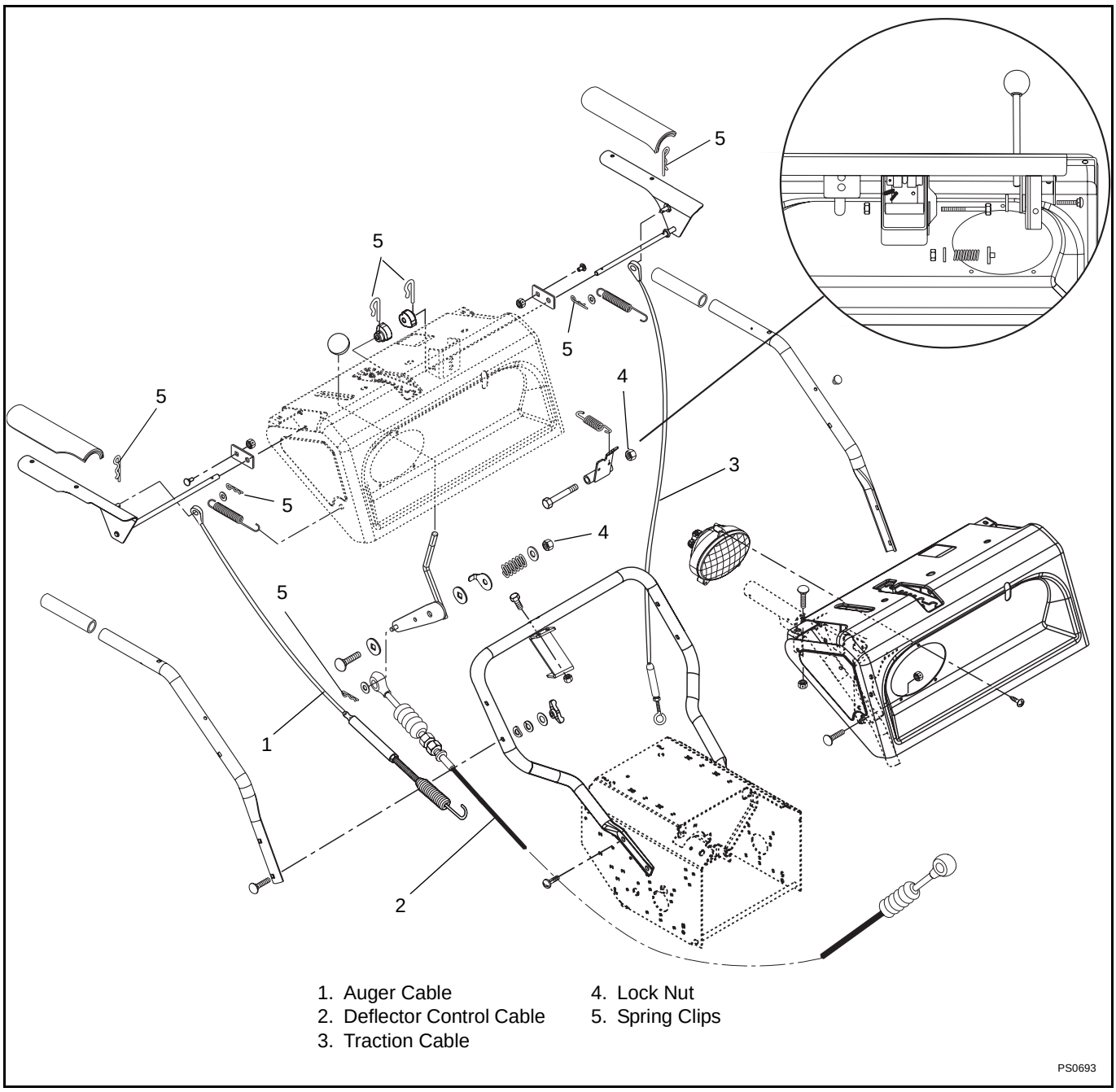


Figure 18

SECTION 7 - ENGINE

7.1 ENGINE TROUBLESHOOTING

The following troubleshooting chart is to be used to isolate engine problems and give possible causes and corrective action responses.

The troubleshooting key is generic and can be used for several types of engines. Use only those possible causes and corrective actions that apply to the unit.

TROUBLE	POSSIBLE CAUSES (Refer to Key Below)	CORRECTIVE ACTION
Black Exhaust	1, 20, 22, 25, 29, 31, 32, 33	repair or replace
Blue/White Exhaust	4, 20, 25, 31, 33, 34	repair or replace
Difficult Starting	1, 5, 7, 8, 10, 20, 21, 22, 29, 31, 32, 33	repair or replace
Erratic Running	1, 7, 8, 10, 20, 21, 23, 26, 29, 33, 59, 62	repair or replace
Excessive Fuel Consumption	1, 20, 22, 23, 25, 39, 31, 32, 33	repair or replace
High Oil Pressure	4, 41	repair or replace
Knocking	22, 26, 29, 31, 33, 36, 46, 59	repair or replace
Loss of Power or System	1, 8, 10, 20, 21, 22, 23, 25, 26, 31, 32, 33	repair or replace
Low Cranking Power	2, 3, 4	repair or replace
Low Oil Pressure	4, 36, 37, 39	repair or replace
Misfiring	10, 20, 25, 26, 28, 29, 32	repair or replace
Overheating	1, 19, 25,	repair or replace
Poor Compression	25, 28, 29, 31, 32, 33, 34,59,	repair or replace
Starts and Stops	1, 6, 10, 62	repair or replace see electrical systems see engine service manual
Vibration	20, 23, 25, 26, 29, 33, 49	repair or replace
Will Not Crank	2, 11	charge battery or replace
Will Not Start	1, 10, 62	repair or replace see electrical systems see engine service manual

TROUBLESHOOTING KEY

1	Restriction in air cleaner	22	Incorrect grade of fuel	43	Faulty suction pipe
2	Bad electrical connection	23	Sticking throttle/restricted movement	44	Choked oil filter
3	Faulty starter motor	24	Exhaust pipe restriction	45	Bad solenoid switch
4	Incorrect grade of lubricating oil	25	Leaking cylinder head gasket	46	Incorrect piston height
5	Low cranking speed	26	Overheating	47	Damaged fan
6	Fuel tank empty	27	Cold running	48	Faulty engine mounting
7	Controls not in correct operation position	28	Incorrect tappet adjustment	49	Incorrectly aligned flywheel and/or flywheel housing
8	Blocked fuel feed line	29	Sticking valves	50	Faulty thermostat
9	Faulty fuel lift pump	30	Incorrect high pressure pipes	51	Restriction in water jacket
10	Choked fuel filter	31	Worn cylinder bores	52	Loose fan belt
11	Battery capacity low	32	Pitted valves and seats	53	Choked radiator
12	Air in fuel system	33	Broken, worn or sticking piston ring(s)	54	Faulty water pump
13	Faulty fuel injection pump	34	Worn valve stems and guides	55	Choked breather pipe
14	Faulty fuel injectors or incorrect type	35	Restriction in air cleaner	56	Damaged valve stem oil deflector (if fitted)
15	Incorrect use of cold start equipment	36	Worn or damaged bearings	57	Coolant level too low
16	Faulty cold start equipment	37	Insufficient oil in sump	58	Blocked sump strainer
17	Broken fuel injection pump drive	38	Bad/defective oil temperature switch	59	Broken valve spring
18	Incorrect fuel pump timing	39	Oil pump worn	60	Exhaust or vacuum pipe leak
19	Incorrect valve timing	40	Pressure relief valve sticking open	61	Bad or defective water temperature switch
20	Poor compression	41	Pressure relief valve sticking closed	62	Bad spark plug(s)
21	Blocked fuel tank vent	42	Broken relief valve spring		

See your engine manual for information on the operation and maintenance of your engine. Follow those instructions for oil and filter changes.

7.2 REMOVING THE ENGINE

1. Drain gasoline.
2. Remove both belts from the engine pulleys. Remove pulleys.
3. If the unit has a bracket at the top of the engine for chute/deflector controls, unbolt it.
4. If the unit is equipped with electric starting, remove the starter.
5. Remove the four mounting bolts from the engine base.

7.3 INSTALLING THE ENGINE

1. Position the engine in the frame.
2. Insert mounting bolts and tighten.
3. If equipped with electric starting, install the starter.
4. Reattach any brackets for chute/deflector controls.
5. Install pulleys on engine shaft. Do not tighten set screws.
6. Install belts. Adjust the engine pulleys to align with attachment and drive pulleys. Tighten set screws.

SECTION 8 - REDUCTION DRIVE

8.1 WHEELS AND AXLE

The wheels are held onto the axle with locking pins (Figure 19). To remove a wheel pull the locking pin and the wheel will slide off.

To remove the axle:

1. Place the unit in upright service position.
2. Remove the bottom plate.
3. Remove both wheels.
4. Drive out both roll pins
5. The axle will slide out either side.

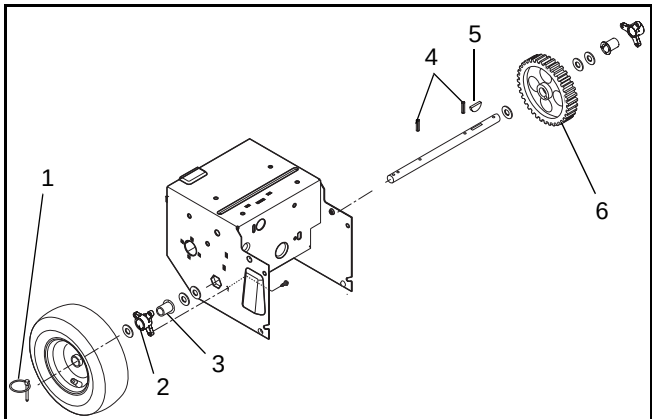
NOTE: Make a record of the positions for the washers and flanges for reassembly.

To install the axle:

1. Slide the axle into the main frame from either direction.
2. Place flanges, washers, and spur gear into the axle in correct order.

NOTE: The spur gear can go on in either way. The nylon flanges must enter into the bushings from the inside out.

3. Insert the woodruff key into the axle and slide the spur gear into position.
4. Move washers into position and drive the roll pins into the axle
5. Replace wheels.



1. Axle Lock Pin
2. Bushing
3. Flanged, Split, Nylon Bushing
4. Roll Pin
5. Woodruff Key
6. Spur Gear

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Figure 19

8.2 SPROCKET AND CHAIN

A friction wheel is driven and provides power to the axle shaft (Figure 20). Power is transferred using a chain to a sprocket assembly. To replace the drive chain remove both shafts.

To remove pinion shaft:

1. Place unit in up right service position.
2. Remove wheels and bottom plate.
3. Drive out the two roll pins. These two pins are different in diameter. Make note of which pin is in each hole.
4. Slide the shaft out towards the end with the grease fitting.

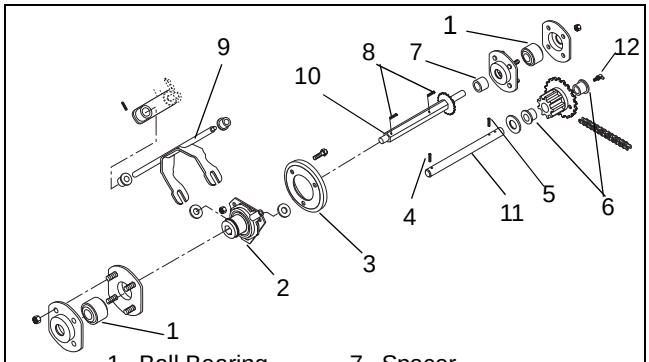
NOTE: The components on the pinion shaft can all be removed. The hex shaft must be removed (at least partially) to remove the roller chain.

To remove the hex shaft:

See Section 9 - *Friction Disc Replacement*

To install pinion shaft:

1. Slide pinion shaft into the main body with the roll pin hole closest to the end away from the pinion.
2. Put the washer, flange, and pinion over the shaft. The shaft should be through the center of the chain.
3. Position the shaft with pinion and other parts in place.
4. Select the correct roll pin for the hole on the shaft and drive it into position.
5. Drive the second roll pin into the shaft.
6. Grease the pinion using the grease fitting on the end of the shaft.



1. Ball Bearing
2. Shift Carrier
3. Friction Disc
4. Roll Pin .16 dia
5. Roll Pin .13 dia
6. Flange Bushing
7. Spacer
8. Roll Pin.125 dia
9. Speed Fork
10. Hex Shaft
11. Pinion Shaft
12. Grease Fitting

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Figure 20

9.1 FRICTION DISC REPLACEMENT

Remove (Figure 21)

1. Shut off engine, remove key, disconnect spark plug wire, and allow unit to cool completely.

> **CAUTION:** Remove fuel from fuel tank prior to placing unit in service position.

2. Place unit on a level surface and tip unit up onto front housing.
3. Remove wheels.
4. Remove bottom cover.

NOTE: The following may be easier if the pinion shaft is removed. See Section 8 - *Reduction Drive*.

5. Disconnect shift rod from speed selector arm.
6. Carefully tap roll pins out of hex shaft.
7. Remove outside bearing flange and bearing from each side of unit.
8. Remove friction disc from shift carrier.
9. Remove roller chain from sprocket on hex shaft.
10. Remove spacer from hex shaft.
11. Hold shift carrier and slide hex shaft slowly to the right.
12. Slide shaft only far enough to remove the old friction disc from hex shaft.

Install

1. Place flat side of new friction disc against shift carrier.
2. Hold shift carrier, slide hex shaft back toward the left through roller chain and spacer, and through the opening in the side of the unit.

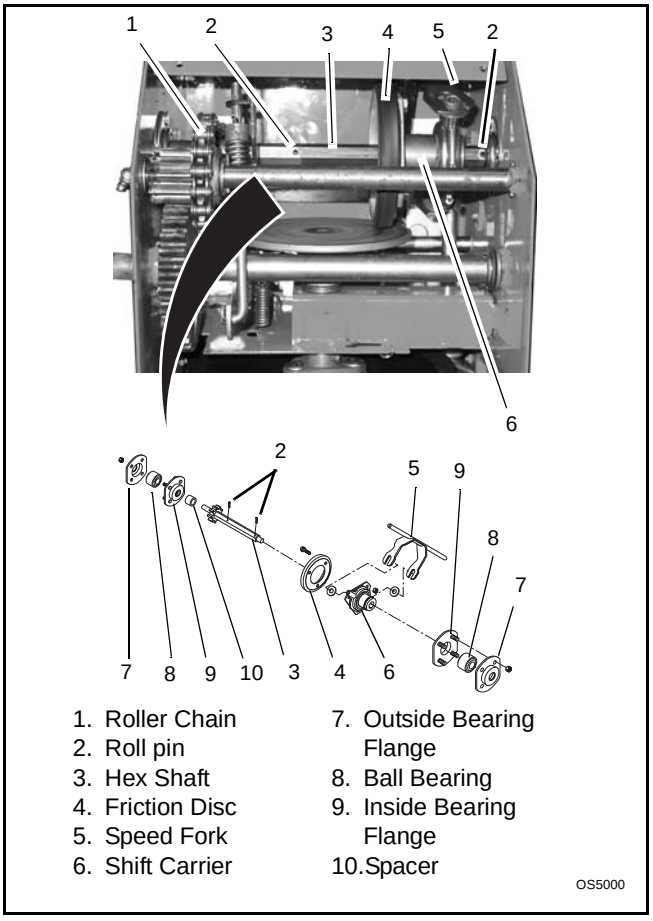


Figure 21

3. Install roller chain on sprocket teeth of hex shaft.
4. Install bearings and outside bearing flanges.
5. Bolt new friction disc to shift carrier. Tighten hardware to 5-6 lbf-ft (6.8 to 8.13 Nm).
6. Install roll pins in hex shaft. Ensure roll pins are centered in hex shaft.
7. Install shift rod on speed selector arm.
8. Install bottom cover.
9. Install wheels.
10. Set unit upright.
11. Install spark plug wire on spark plug.
12. Adjust speed selector lever.

9.2 FRICTION WHEEL CARRIER

The friction wheel carrier is not repairable and is replaced when needed. Inspect the carrier when the friction wheel is serviced.

9.3 FRICTION PLATE

The firction plate can be removed and inspected when the drive system, friction plate, and axle have been removed. Refer to the appropriate sections of this manual for more information.

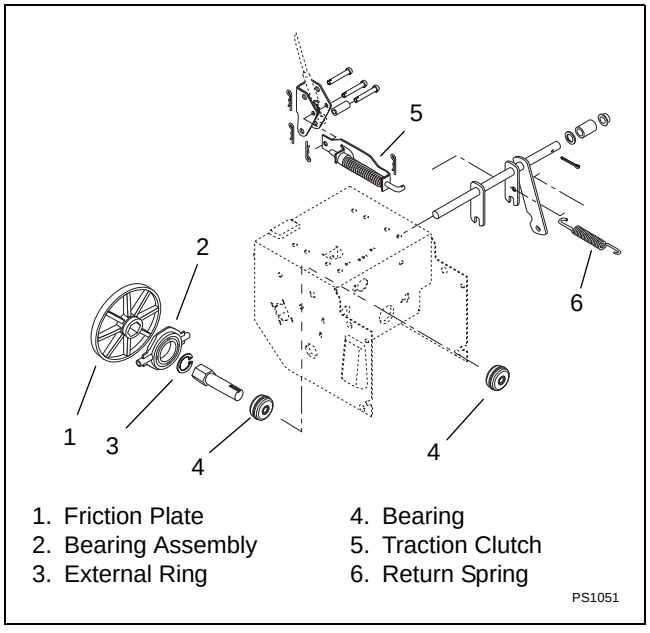
1. Disconnect the friction plate return spring, Figure 22.
2. Lift friction plate off the hex shaft.
3. Inspect for wear.
4. When reassembling apply anti-seize to the shaft before installing the friction plate.

9.4 FRICTION PLATE HEX SHAFT

To remove the shaft (Figure 21), place the unit in the belt service position. Remove the front half of the frame.

1. Remove the belt from the pulley.
2. Unscrew the bolt from the pulley and remove the pulley.
3. Remove the hub key.
4. Tip the frame forward and remove the drive system, friction wheel, and friction plate. Refer to appropriate sections of this manual for more information.
5. Pull the shaft out of the bearings.
6. Reassemble in reverse order.

When installing the friction plate to the hex shaft, use anti-seize on the shaft.



1. Friction Plate
2. Bearing Assembly
3. External Ring
4. Bearing
5. Traction Clutch
6. Return Spring

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Figure 22

SECTION 10 - AUGER/IMPELLER

10.1 AUGER/IMPELLER REMOVAL

Place unit in the belt service position.

1. Remove bolt holding auger driven pulley to shaft and remove pulley.
2. Remove three nuts holding bushing flange to housing and remove flange on each side.
3. Grasp auger assembly and pull gear case and auger/impeller assembly free of housing.
4. Remove shear bolts and remove auger from shaft.
5. Check all parts for wear or replacement.
6. Assemble using reverse procedure.

10.2 SHEAR BOLTS

WARNING: Stop engine, remove key, wait for moving parts to stop and remove wire from spark plug before leaving operator's position and attempting to maintain or inspect auger.

IMPORTANT: Use only Ariens shear bolts for replacement. Use of any other type of shear bolt may result in severe damage to unit.

Occasionally an object may enter auger/impeller housing and jam auger, breaking shear bolts which secures auger to shaft. This allows auger to turn freely on shaft preventing damage to gear drive.

To replace shear bolt:

1. Slide auger outward against roll pin and align hole in shaft with hole in auger (Figure 23). The holes in shaft for roll pins and shear bolts will line up.
2. Drive the new shear bolt through hole (if shear bolt was broken this will drive remaining part from shaft).
3. Secure with nut.

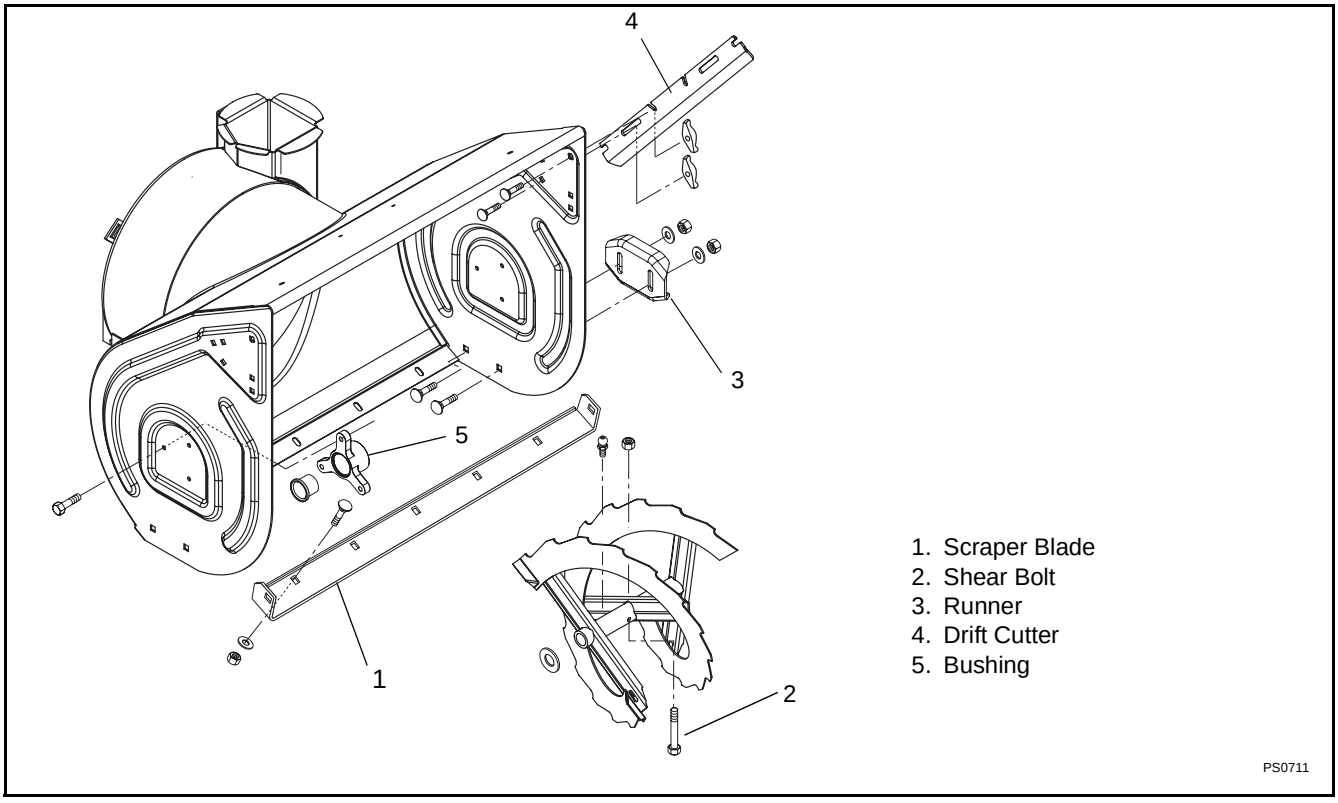


Figure 23

10.3 DISCHARGE CHUTE

WARNING: DO NOT put hands or feet near or under rotating parts. Keep clear of discharge opening at all times.

WARNING: NEVER direct discharge of material toward bystanders nor allow anyone in front of equipment while unit is in operation. Be familiar with area of operation.

To remove discharge chute unbolt the chute positioning assembly from the discharge chute. Tip discharge chute forward and lift.

NOTE: Chute must rotate freely. To adjust the gears tighten or loosen the lower nut (Figure 24). This will adjust the spring tension on the gears.

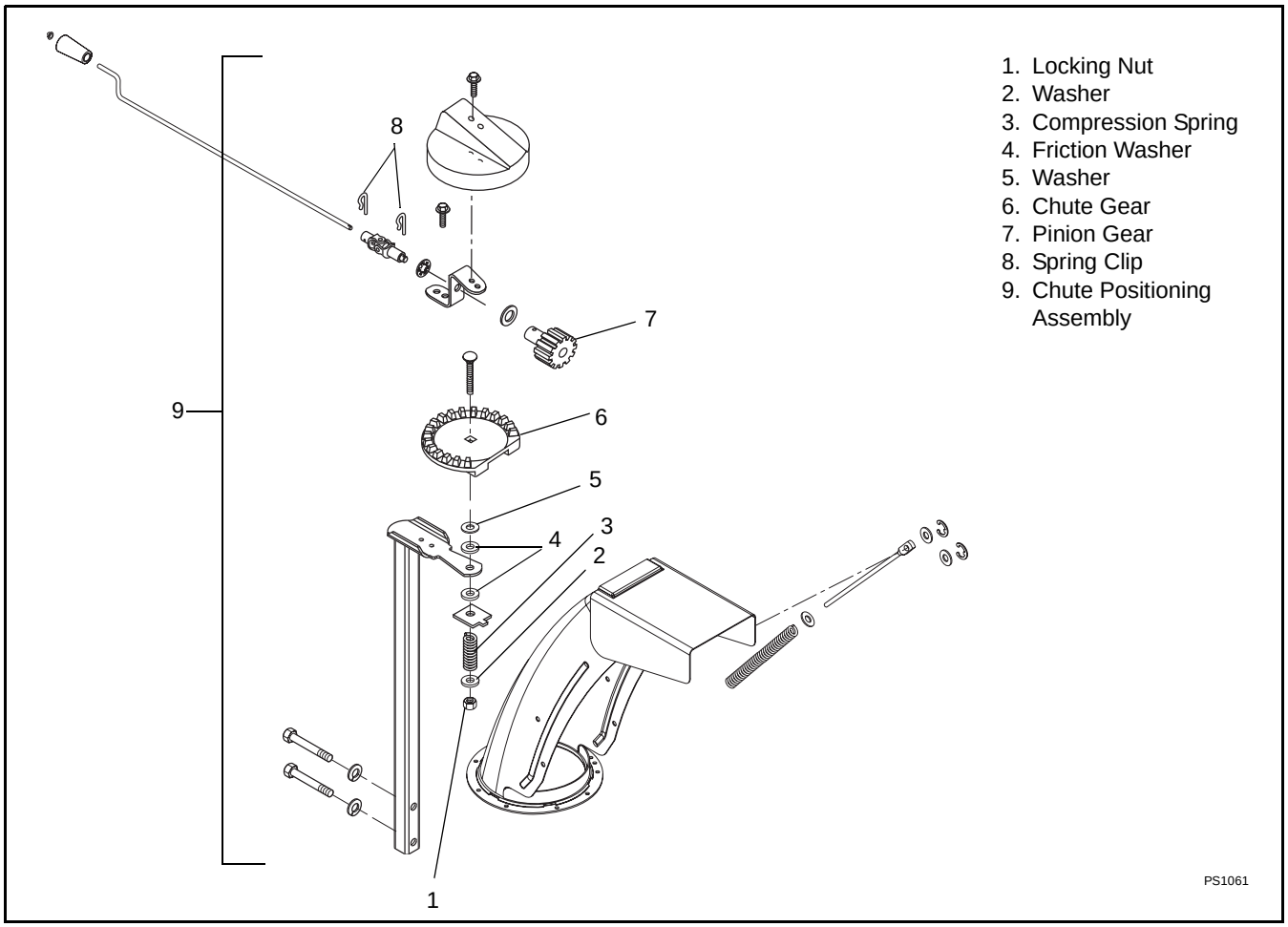


Figure 24

10.4 RUNNERS

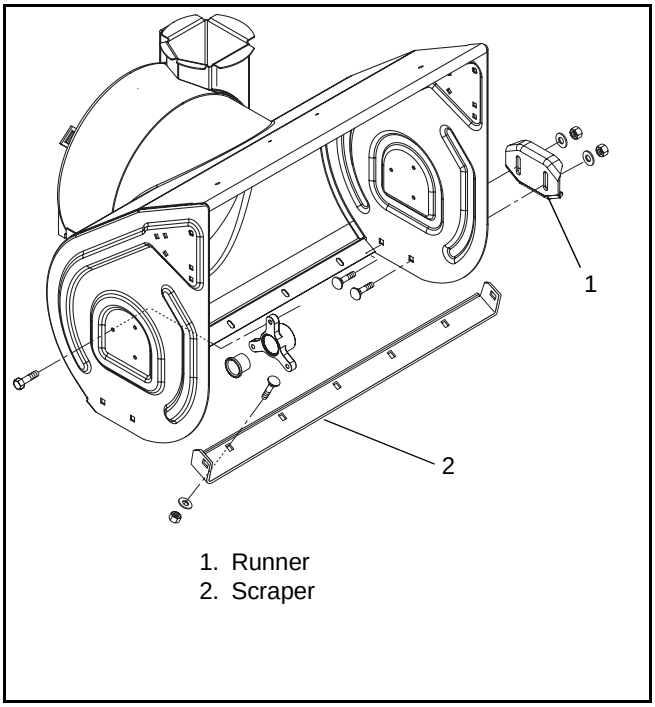
CAUTION: Adjust auger/impeller housing height to clear gravel or crushed rock surfaces.

Runners should be adjusted as conditions require (Figure 25). Raising or lowering runners controls distance scraper blade is held above surface being cleared.

When operating machine on gravel surface, lower runners so the housing will not pick up gravel. On concrete, blacktopped or packed down snow surfaces, raise runners so that scraper blade scrapes clean.

Position unit on a flat level surface. Adjust runners by inserting a spacer of desired thickness under center of scraper blade, loosen hardware, slide runners to flat surface and retighten hardware.

NOTE: Above method keeps housing level by adjusting runners equally. Uneven runners make machine difficult to steer and results in uneven clearing.



1. Runner
2. Scraper

Figure 25

SECTION 11 - GEAR CASE

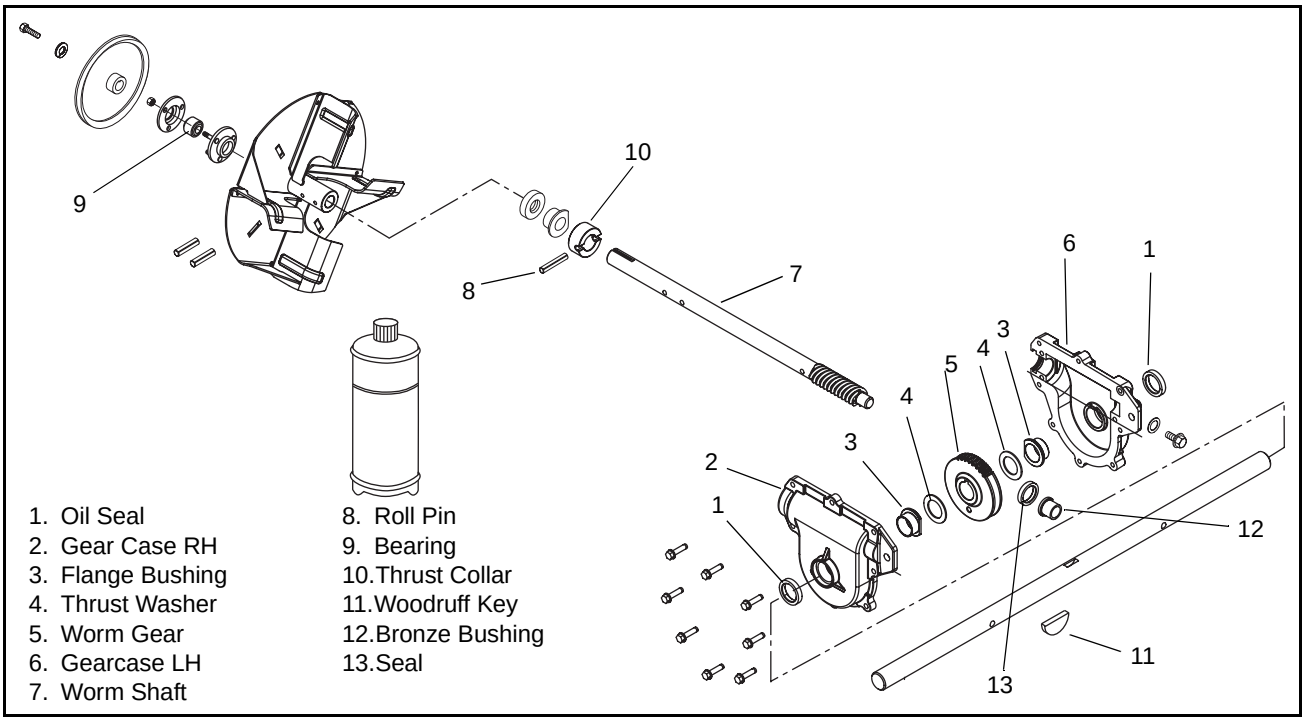
11.1 ALUMINUM GEAR CASE

1. Remove auger/impeller and gear case from housing referring to *Auger/Impeller* Section.
2. Remove eight bolts that hold right and left gear case halves together (Figure 26).
3. If flange bushings need replacement, first remove seals from outside of gearcase halves with a screwdriver. Flange bushings can then be pressed out from outside in with a bearing driver. Bushings are very lightly pressed in.
4. When replacing bushings make sure the flat on the flange of bushing fits in the inside notch of the case.
5. There are two special thrust washers, one on either side of worm gear. If burred or worn, they should be replaced.
6. Holding the worm gear on rake shaft is a wood ruff key.
7. Remove bronze bushing from front of worm shaft by sliding it off. Replace if necessary. Notice that a flat on the bushing flange positions the bearing inside the gearcase.
8. Behind rear bronze bushing is a seal which fits into a groove in gearcase. It should be replaced at time of repair.
9. Rear bushing is a larger diameter than one in front, but are identical in design. Replace if necessary.
10. If replacement of thrust collar is necessary, drive out groove pin towards direction of least resistance.
11. Inspect worm shaft for burrs or black coloration. If either show up, replace shaft.
12. Prior to re-assembly, apply anarobic sealant to a clean surface. Allow to cure for 24 hours. Reassemble. Make sure the flats on the bushings are in their proper place.

This case requires Ariens L-2 P/N 00008000 and should be half full.

After assembly is complete you should be able to turn input shaft freely.

Auger/impeller gearcase is lubricated with Ariens L-2 (P/N 00008000). Check lubrication by removing filler plug. Lubrication should be even with hole with unit sitting level. It may be necessary to insert a wire into the hole to check level. Unit will not be damaged by over-lubricating.



1. Oil Seal
2. Gear Case RH
3. Flange Bushing
4. Thrust Washer
5. Worm Gear
6. Gearcase LH
7. Worm Shaft
8. Roll Pin
9. Bearing
10. Thrust Collar
11. Woodruff Key
12. Bronze Bushing
13. Seal

Figure 26

12.1 WIRING 932105, 506

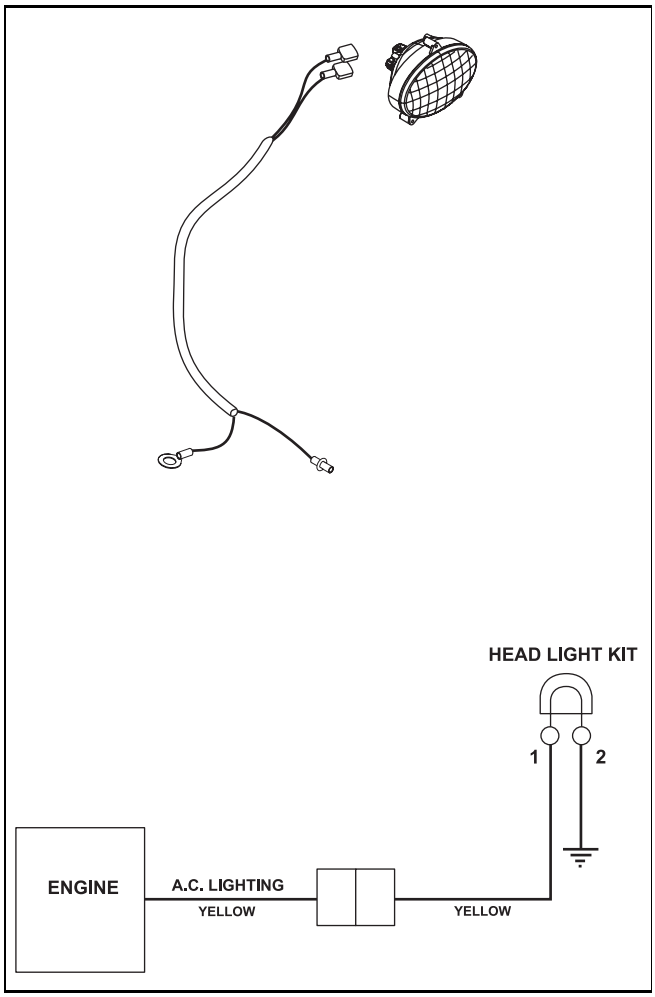


Figure 27

SECTION 13 - TROUBLESHOOTING

Problem	Probable Cause	Correction
Engine will not crank/start.	1. Fuel tank is empty. 2. Fuel shut-off valve closed. 3. Build up of dirt and residue around governor/carburetor. 4. Key switch not in run position. 5. Ignition switch starter circuit not functioning.	1. Fill fuel tank. 2. Open fuel shut-off valve. 3. Clean an area around governor/ carburetor. 4. Put key switch into run position. 5. Check for a bad starter or connections
Engine stops.	1. Out of fuel. 2. Fuel shut-off valve closed. 3. Mechanical jam in blower rake or impeller. 4. Polluted fuel supply 5. Faulty spark plug.	1. Fill fuel tank. 2. Open fuel shut-off valve. 3. Turn off engine, remove key, and wait for all moving parts to stop. Check for and remove obstruction and repair before restart. 4. Replace with clean fuel. 5. Replace or clean spark plug.
Engine Problems.	1. See Engine Manual.	
Does not operate in Forward/Reverse.	1. Friction disc not adjusted properly. 2. Traction belt not functioning. 3. Speed selector not adjusted properly.	1. Repair or replace fiction disc. See *Service and Adjustments*. 2. Repair or replace traction drive belt. See *Service and Adjustments.* 3. Adjust speed selector. See *Service and Adjustments.*
Small rubber beads collect in frame.	1. Friction disc wear.	1. Normal friction disc wear. Chunks or large pieces of rubber mean friction disc should be checked and replaced as necessary.
Unit throws snow poorly or does not throw snow.	1. Shear bolts broken. 2. Attachment clutch/brake not adjusted properly. 3. Attachment drive belt worn or damaged.	1. Replace shear bolts (see *Shear Bolts*). 2. Adjust attachment clutch/brake (see *Attachment Clutch/Brake Adjustment*). 3. Replace attachment drive belt (see *Attachment Clutch/Brake Adjustment*).

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